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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/671,409	09/27/2000	Markus Loose	00SC053US3	6802

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EXAMINER

KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/671,409

Applicant(s)

LOOSE, MARKUS

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 9 and 13-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 9 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 1 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 22 April 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1 and 9 are objected to because of the following informalities, which appear to be minor draft errors creating lack of antecedent basis problems: (claim 1, line 13, "said pixel"), (claim 9, line 12, "said photodetector signals"), and (claim 9, line 23, "said pixel's").

The following are suggestions for obviating the respective objections (claim 1, line 13, replacing "said" with - each- -), (claim 9, line 12, deleting "said"), and (claim 9, line 23 replacing "pixel's" with - pixels- -).

For purposes of examination, the claims will be treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-3 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, line 4, the phrase "may be" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). For purposes of examination, "may be switchably" is interpreted as - "are switchably".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Wilder et al. (US Patent 5262871).

Wilder et al. discloses a photodetector array (Fig. 2) comprising a plurality of active pixels arranged into at least three horizontal rows and vertical columns (Fig. 2), wherein each pixel (Abstract, “superpixel”) comprises an association of at least two subpixels (Abstract, “pixels”) arranged such that their outputs may be switchably connected (Abstract) to a common pixel node (col. 12, line 64, through col. 13, line 3), and wherein the output of the subpixels are switchably combined into two different grouping arrangements to give at least two different resolutions (Title and Abstract), wherein the different grouping arrangements combine outputs of two adjacent subpixels in a given vertical column and three adjacent subpixels in the given column (Abstract and col. 6, lines 1-65), each of the pixels having an intrinsic capacitance storing the combined output prior to being readout (Figs. 1 and 2, connections between the image sensor and signal read out), and an addressing circuit enabling the combined subpixel outputs to be read out in response to an address input (Abstract).

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilder et al., Matsunaga et al. (US Patent 6091449) and Takahashi (US Patent 5955753).

5. With regards to claims 9 and 15, Wilder et al. discloses a photodetector array (Fig. 2) with selectable resolutions (Title) comprising photodetectors (Fig. 5a) and pixels (Abstract, "superpixel"), a switching circuit directly summing at each pixel outputs of multiple photodetectors into an aggregated pixel output (Abstract, lines 10-12), said photodetector outputs arranged so their outputs are connected to a common pixel node, said aggregated pixel output stored on said pixel's intrinsic capacitance prior to being read out (Fig. 9 as one example), wherein the switching is between different selectable pixellization schemes with differing resolutions (Abstract) with one configuration as a sum of at least three photodiodes or subpixels (col. 2, lines 62-68), and a plurality of addressable interface circuits each enabling the aggregated pixel output to be read out in response to an address input (Abstract, lines 1-8).

However, Wilder et al. does not disclose a pixel output as the sum of two photodiodes in a single pixel.

Matsunaga et al. teaches two photodiodes in a single pixel (Abstract and Fig. 18).

Takahashi teaches a pixel output as the sum of two photodiodes (Fig. 8, #24 and #6).

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It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the photodiodes of Matsunaga et al. with the device of Wilder et al., since one would be motivated to incorporate this for reducing apparatus size as implied from Matsunaga et al. (Abstract and col. 2, lines 55-60).

It would also have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the pixel output as the sum of two photodiodes of Takahashi with the device of Wilder et al., since one would be motivated to use this arrangement to reduce the number of devices and wirings and reduce manufacturing costs (col. 2, lines 50-56) as implied from Takahashi as well as resolution changes as implied from Takahashi (col. 5, lines 55-67, through col. 6, lines 1-22).

6. Regarding claims 13 and 14, Wilder et al. in view of Matsunaga et al. and Takahashi suggests a device as recited above.

However, Wilder et al. does not seem to specifically disclose an array switchable between 1920 and 1080 rows or 1080 and 720 columns.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have an array switchable between 1920 and 1080 row or 1080 and 720 columns with the suggested device of Wilder et al. in view of Matsunaga et al. and Takahashi, since it would have just been a matter of engineering expediency to choose a resolution that was considered high and a resolution that was considered low. Secondly, discovering the optimum or workable range for resolution involves only routine skill in the art. One would be motivated to have a resolution as high as 1920 rows or 1080 columns for greater detail in the image, while one

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would be motivated to have a resolution as low as 1080 rows or 720 columns for faster processing.

7. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilder et al. as applied to claim 15 above.

Wilder et al. discloses a device as recited above.

However, Wilder et al. does not seem to specifically disclose an array switchable between 1920 and 1080 rows or 1080 and 720 columns.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have an array switchable between 1920 and 1080 row or 1080 and 720 columns with the device of Wilder et al., since it would have just been a matter of engineering expediency to choose a resolution that was considered high and a resolution that was considered low. Secondly, discovering the optimum or workable range for resolution involves only routine skill in the art. One would be motivated to have a resolution as high as 1920 rows or 1080 columns for greater detail in the image, while one would be motivated to have a resolution as low as 1080 rows or 720 columns for faster processing.

Allowable Subject Matter

8. Claims 1-3 and 5 would be allowable if rewritten or amended to overcome the objections and rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter:

With regards to claim 1, prior art does not disclose or fairly suggest a photodetector array

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comprising a first circuit directly combining the outputs of two photodiodes in parallel in a pixel and a second circuit combining the output of at least one of said photodiodes in parallel with the output of a photodiode of a neighboring pixel in the array, in combination with all the limitations in the claim. Claims 2, 3, and 5 contain allowable subject matter by virtue of dependency and the allowable subject matter indicated in claim 1.

Response to Arguments

9. Applicant's arguments with respect to claims 9 and 13-15 have been considered but are moot in view of the new ground(s) of rejection.

10. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "active pixels, with an amplifier for every pixel") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. Secondly, with regards to Wilder et al., Wilder et al. does discuss photodiodes (Fig. 5a), whose outputs are inherently combined (Abstract). With respect to Takahashi, resolution changes are implied (col. 5, lines 55-67, through col. 6, lines 1-22).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - F (9 am to 5 pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk
August 19, 2003



DAVID V. BRUCE
PRIMARY EXAMINER